



ILLINOIS STATEWIDE CONGESTION ANALYSIS STUDY



CLIENT:
Illinois Department of Transportation

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CONTRACT:
PTB 168, Item 29 - \$1.49 million

PROJECT PURPOSE:

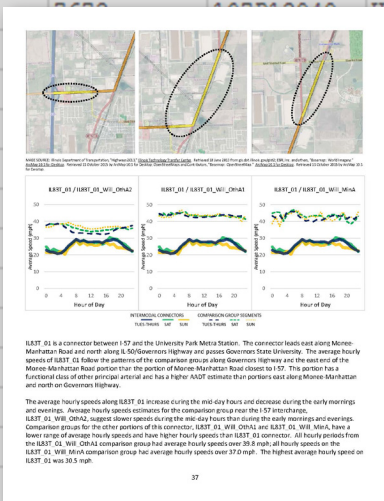
- Determine Where and When Traffic Congestion Occurs
- Determine Reasons Why Traffic Congestion Occurs
- Identify Successful Approaches to Mitigate Congestion

The Illinois Statewide Congestion Analysis Project seeks to define a multi-modal view of traffic congestion as experienced across the state and approaches to mitigate congested conditions.

The project tasks develop performance metrics for multiple types of vehicles across the statewide network. Project tasks have addressed express bus and local bus performance, tollway and expressway congestion, arterial and intermodal connector behaviors, grade crossing delays, and connections to airports and intermodal terminals.

DAMA is the Prime for this project and applies its experience and skills in SQL and SAS data analysis, GIS analysis, transit operations, freight logistics, Intelligent Transportation Systems (ITS), survey analysis, and stakeholder engagement to identify locations where congestion occurs and opportunities to address those conditions.

DAMA uses data sources from Illinois Department of Transportation, the Federal Highway Administration, the National Highway System, National Performance Management Research Data Set (NPMRDS), CMAP, the RTA, Pace, and the CTA. DAMA has developed tools and methods to combine data from these sources, identify performance measurements, and report conditions across multiple modes.



2889	107N11544	USA
10797	119N13157	USA
12295	119P13158	USA

Route	Year	Segment	Direction	AM Peak	PM Peak	Overall
307	2002	Archer	South	1.48	1.46	1.47
307	2003	Archer	South	1.47	1.46	1.46
307	2004	Archer	South	1.47	1.46	1.46
307	2005	Archer	South	1.47	1.46	1.46
307	2006	Archer	South	1.47	1.46	1.46
307	2007	Archer	South	1.47	1.46	1.46
307	2008	Archer	South	1.47	1.46	1.46
307	2009	Archer	South	1.47	1.46	1.46
307	2010	Archer	South	1.47	1.46	1.46
307	2011	Archer	South	1.47	1.46	1.46
307	2012	Archer	South	1.47	1.46	1.46
307	2013	Archer	South	1.47	1.46	1.46
307	2014	Archer	South	1.47	1.46	1.46
307	2015	Archer	South	1.47	1.46	1.46
307	2016	Archer	South	1.47	1.46	1.46
307	2017	Archer	South	1.47	1.46	1.46
307	2018	Archer	South	1.47	1.46	1.46
307	2019	Archer	South	1.47	1.46	1.46
307	2020	Archer	South	1.47	1.46	1.46
307	2021	Archer	South	1.47	1.46	1.46
307	2022	Archer	South	1.47	1.46	1.46
307	2023	Archer	South	1.47	1.46	1.46
307	2024	Archer	South	1.47	1.46	1.46
307	2025	Archer	South	1.47	1.46	1.46
307	2026	Archer	South	1.47	1.46	1.46
307	2027	Archer	South	1.47	1.46	1.46
307	2028	Archer	South	1.47	1.46	1.46
307	2029	Archer	South	1.47	1.46	1.46
307	2030	Archer	South	1.47	1.46	1.46

Table 2: AM and PM Peak Travel Time Ratios for These Pace Bus Routes

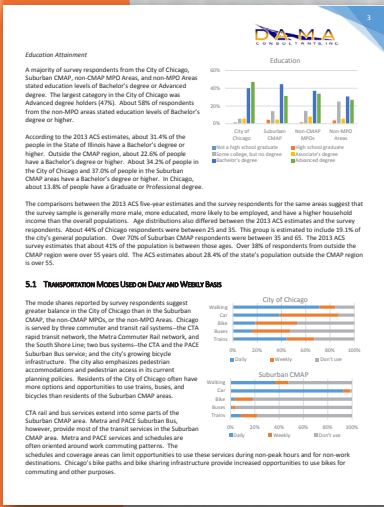
The above TR values appear to correspond to TCMAS expected values, with only one segment (1099) observing values higher than 2.0 in the scope of analysis. As shown, during the months of July 2014 and August 2014, the AM Peak values for this God's Lane segment recorded values of 2.4 and 2.42, respectively. However, as this segment was artificially assembled by assuming constant speed and extracting values only from the portion of route No. 270 that fell on tollway lanes (the route deviates from the arterial road system and TMC coverage), these values may be suspect.

Five segments recorded values lower than 1.0 during the AM Peak. For route No. 270, these are segments 1002 (07 in September 2014), 1003 (05 in September 2014), 1005 (09 in July 2014 and 08 in September 2014), and 1001 (02 in July 2014, 0.74 in August 2014, and 0.66 in September 2014). For route No. 307, the applicable segment is 2002 (04 in July 2014, 0.92 in August 2014, and 0.88 in September 2014).

Three segments recorded values lower than 1.0 during the PM Peak. For route No. 270, these segments are 1006 (09 in August 2014) and 1005 (07 in July 2014, 0.66 in August 2014, and 0.73 in September 2014). For route No. 307, the applicable segment is 2002 (04 in July 2014, 0.89 in August 2014, and 0.83 in September 2014).

Values less than 1.0 indicate that bus speed is faster than general traffic speed, which could suggest that a low number of stops are being made in those locations or that traffic is moving more quickly than travel (right lane) compared to the other general traffic lane. PM Peak TR values are slightly greater in value compared to AM Peak TR values, with an overall average value of 1.06 (1.06 vs 1.03).

The data was visualized on a map to check for patterns. Routes are displayed with southbound direction on the left and the northbound direction on the right. Figure 1, which depicts the AM Peak, revealed a



5.1. Transportation Modes Used on Daily and Weekly Bases

The modes shared reported by survey respondents suggest greater balance in the City of Chicago than in the Suburban CMAP, the non-CMAP MPDs, or the non-MPD Areas. Chicago is served by three commuter and transit systems: the CTA rapid transit network, the Metra Commuter Rail network, and the South Shore Line bus-rail system; the CTA and the Pace Suburban Bus service; and the city's growing bicycle infrastructure. The city emphasizes pedestrian accommodations and pedestrian access in its current planning policies. Residents of the City of Chicago often have more options and opportunities to use trains, buses, and bicycles than residents of the Suburban CMAP Areas.

CTA rail bus services extend into some parts of the Suburban CMAP Area. Metra and Pace Suburban Bus, however, provide most of the transit services in the Suburban CMAP Area. Metra and Pace services and schedules are often oriented toward work commuting patterns. The schedules and coverage areas on rail opportunities to use these services during non-peak hours and for non-work destinations. Chicago's bike paths and bike sharing infrastructure provide increased opportunities to use bikes for commuting and other purposes.

IMAGE SOURCE: ESRI, Inc., and Others. "Basemap: World Imagery." ArcMap 10.3 PC Software. Retrieved 30 October 2015.